

Claims

1. A device (1) for the application and/or for the removal of elements for the connection of a rail to a railway track sleeper, comprising:
 - 5 - at least one lever (2, 3) mounted on a frame (4) so as to be able to rotate around an axis of rotation (5, 6) and equipped with at least one pressure organ (7, 8) adapted to engaging the connecting element;
 - at least one cylinder-piston group (9) adapted to driving the lever (2, 3) in order to assemble or disassemble the connecting element, said cylinder-piston group (9) comprising a cylinder body (10) and a piston (11) slidably housed within the cylinder body (10) and movable with respect to the cylinder body (10) under the action of 15 pressurised-fluid,
 - at least a first (12, 14) and a second (13, 15) stop surface cooperating in such a way as to form a stop device (16, 17) for stopping the lever (2, 3) in a defined position with respect to the frame (4),
- 20 characterised in that said stop surfaces are formed, one (12, 14) of them on the piston (11) and the other one (13, 15) on the cylinder body (10) of said cylinder-piston group (9).
- 25 2. The device (1) according to claim 1, wherein said stop device (16, 17) comprises adjusting means (18, 23, 25)

which allow the adjustment of the position of at least one of said first and second stop surfaces (12, 14; 13, 15).

3. The device (1) according to claim 2, wherein said adjusting means comprise at least one adjusting ring nut (18, 23) for the fine adjustment of the position of at least one stop surface (12, 14; 13, 15).

4. The device (1) according to claims 2 or 3, wherein said adjustment means comprise rapid changeover means (25) for the rapid displacement of one (12) of said stop surfaces and it's positioning in at least two different positions.

5. The device (1) according to any of the preceding claims, wherein the cylinder-piston group (9) comprises two stop devices (16, 17) defining a protracted limit position and a withdrawn limit position for the piston (11).

15 6. The device (1) according to any of the preceding claims, wherein a first stop device (16) comprises:

- a stop member (25) connected to a first end (24) of the piston (11) and equipped with a first stop surface (12),
- an adjusting ring nut (23) screwed onto the cylinder body (10) and carrying a second stop surface (13),

wherein the stop surfaces (12, 13) are configured in such a way as to abut against one another in a withdrawn position of the piston (11) thus impeding any further movement in a first direction, said withdrawn position being adjustable through the rotation of the adjusting ring nut (23).

7. The device (1) according to claim 6, wherein at the adjusting ring nut (23) is placed a graduated plate (26) integral with the cylinder body (10), which allows the precise positioning of the adjusting ring nut (23).

5 8. The device (1) according to claims 5 or 6, wherein the stop member (25) is moveable in a sliding manner along the piston (11) and positionable in at least two different changeover positions, providing said rapid changeover means between two withdrawn positions of the piston (11).

10 9. The device (1) according to claim 8, wherein the stop member (25) comprises a first support surface (31) and a second support surface (32) with different distances from the stop surfaces (12) and adapted to coming up against at least one bearing surface (33) of the piston (11).

15 10. The device (1) according to claim 9, wherein the stop member (25) delimits at least a first groove (34) which forms the first support surface (31) and a second groove (35), deeper than the first groove (34), which forms the second support surface (32), said grooves being adapted to 20 engaging a bearing block (36) having said bearing surface (33).

11. The device (1) according to claim 9, wherein the stop member (25) comprises two first opposing grooves (34) and two second opposing grooves (35) out of phase by 90° with 25 respect to the first grooves (34) and the bearing block

(36) projecting radially from two opposite sides of the piston (11), such as to be able to engage respectively either the first two grooves (34) or the second two grooves (35).

5 12. The device (1) according to any of the claims 8 to 11, comprising blocking means (38, 39) for locking the stop member (25) in its changeover positions.

10 13. The device (1) according to claim 12, wherein said blocking means comprise a resilient stop dowel (38), adapted to engaging grooves (39).

14. The device (1) according to any of the claims 8 to 13, wherein the bearing block (36) is formed in a separate stem (40), connectable by a first side to the piston (11) and by a second side to the lever (2, 3).

15 15. The device (1) according to any of the preceding claims, wherein a second stop device (16) comprises:

- a mushroom-shaped section (19) arranged at a second end (20) of the piston (11) and provided with a first stop surface (14).

20 - an adjusting ring nut (18) screwed onto the cylinder body (10) and having a second stop surface (15), wherein the stop surfaces (14, 15) are configured in such a way as to abut against one another in a protracted position of the piston (11) thus impeding any further movement in a 25 first direction, said protracted position being adjustable

through the rotation of the adjusting ring nut (18).

16. The device (1) according to claim 15, wherein at the adjusting ring nut (18) is placed a graduated plate (22) integral with the cylinder body (10), which allows the
5 precise positioning of the adjusting ring nut (18).

17. The device (1) according to claims 15 or 16, wherein a hollow cover (21) is fixed to the adjusting ring nut (18) and adapted to housing and protecting said second end (20) of the piston (11) with the mushroom-shaped section (19).

10 18. The device (1) according to claims 15, 16 or 17, wherein the mushroom-shaped section (19) is formed by a screw, screwed into a hole in the second end (20) of the piston (11).

19. The device (1) according to any of the preceding
15 claims, comprising two opposing levers (2, 3), mounted on two sides of the frame (4) in a rotatable manner around the respective axes (5, 6).

20. The device (1) according to claim 19, wherein the two levers (2, 3) are movable through two cylinder-piston
groups (9), one for each of the two levers (2, 3).

21. The device (1) according to any of the preceding claims, wherein the cylinder body (10) is connected to the frame (4) and the piston (11) is connected to the corresponding lever (2, 3).

25 22. The device (1) according to claim 19, comprising a

single cylinder-piston group (9), connected to both levers (2, 3).

23. The device (1) according to any of the preceding claims, wherein the pressure organs comprise a pressure shoulder (7) for the insertion, and a hook (8) for the extraction of the connecting element.

24. A cylinder-piston group (9) for a device (1) for the application and/or for the removal of elements for the connection of a rail to a railway track sleeper, said group (9) comprising:

- a cylinder body (10) and a sliding piston (11) housed within the cylinder body (10) and moveable with respect to the cylinder body (10) under the action of pressurised fluid,

- at least one first (12, 14) and second (13, 15) stop surfaces cooperating in such a way as to form a stop device (16, 17) for stopping the piston (11) in a defined position with respect to the cylinder body (10), wherein said stop surfaces are formed, the one (12, 14) on the piston (11) and the other (13, 15) on the cylinder body (10), characterised by comprising at least one adjusting ring nut (18, 23) for the fine adjustment of the position of at least one stop surface (12, 14; 13, 15).

25. The device (1) according to claim 24, further comprising rapid changeover means (25) for the rapid

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displacement of one (12) of said stop surfaces and its positioning in at least two different positions.